

# Observable and acoustic behavior at Indiana bat (*Myotis sodalis*) day roost sites



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# **The Study of Social Behavior**

- **Important insight into the basic biology of a species**
- **Potential addition to management tools**
- **Accessible topic for the public education**

# Bat Social Behavior

<b>Acoustic</b>	<b>Visual</b>
<b>Echolocation</b>  <b>Social calls</b>	<b>Mating behavior</b> <b>Parental care</b> <b>Roost site</b> <b>Foraging</b>

# Indiana bat, *Myotis sodalis*

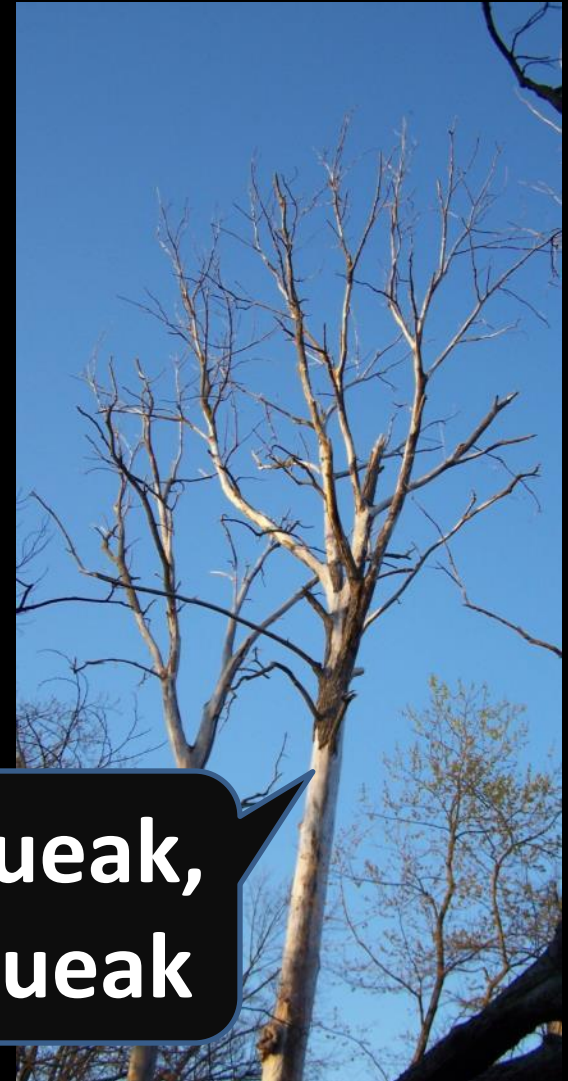


Map source: IUCN 2008

# Colonial Summer Roost Ecology

## Maternity colonies

- April – October
- Give birth and raise young
- Day roost sites
  - Trees and other structures



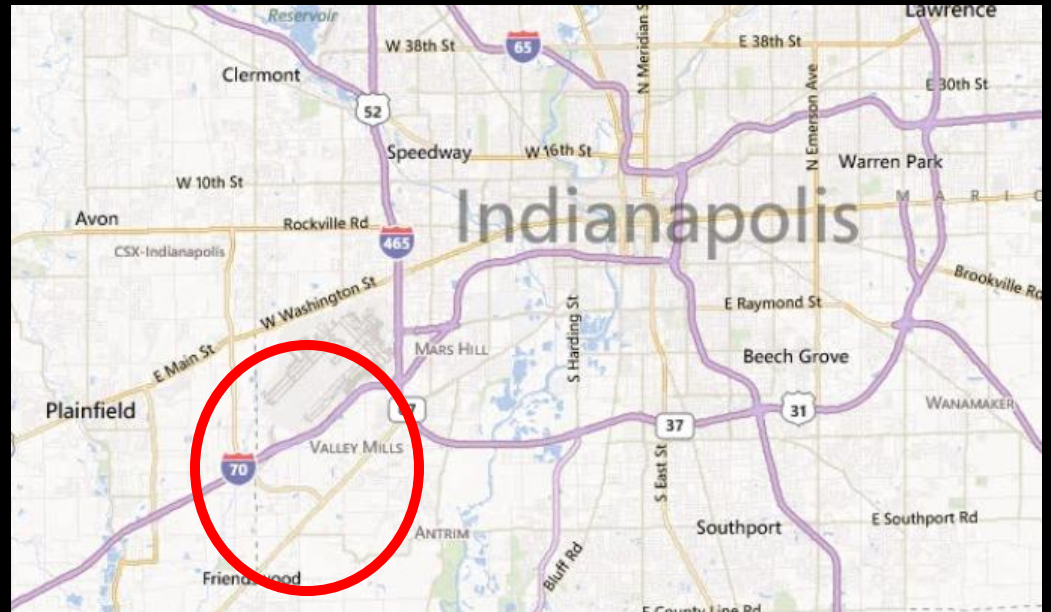
Squeak,  
Squeak



# Study Site

Ongoing research and mitigation efforts started in 1997

Long-term dataset with annual monitoring



# Indianapolis Airport Project

Great opportunity to study behavior

- Predictable locations

- High fidelity

- Maternity season

- Multiple years

- Longer field season

- March-October

# Research Goals

- Develop ethogram



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- Develop ethogram
- Connected pairs of acoustic and observable components?
- Spatio-temporal patterns in use of behaviors?

# Methods

- March through October
- Standard capture methods
- Track to roosts
- Emergence counts
  - Observers
  - Recorded acoustics and video
    - Subset of nights

# Methods



Acoustics:  
Pettersson  
D500X



Video:  
Sony Handycam and IR light

# Preliminary data

Data collection ongoing

2013 results

8 *Myotis sodalis* captured and tracked to roost locations

- 175 Emergence counts

- 175 observer nights

- 58 Recorded nights with equipment



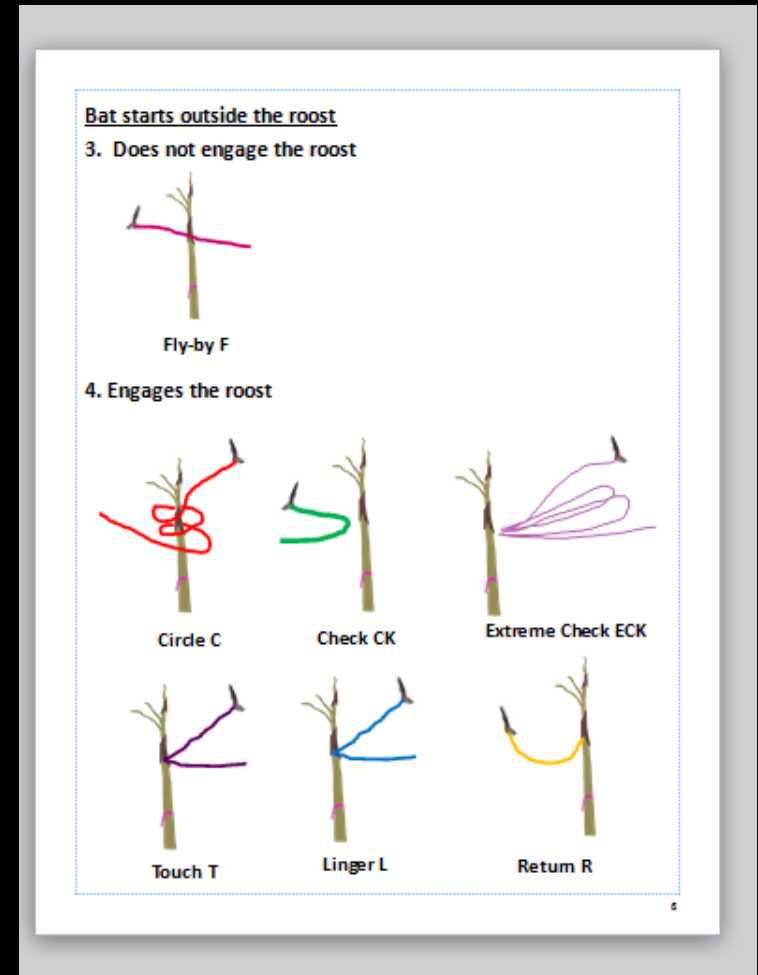
# Preliminary Results



# Preliminary Results

## Ethogram development

- Visual behavior
  - 19 types



# Observable Behaviors: Ethogram



Check



Circle



Emerge



Circle  
Emergence



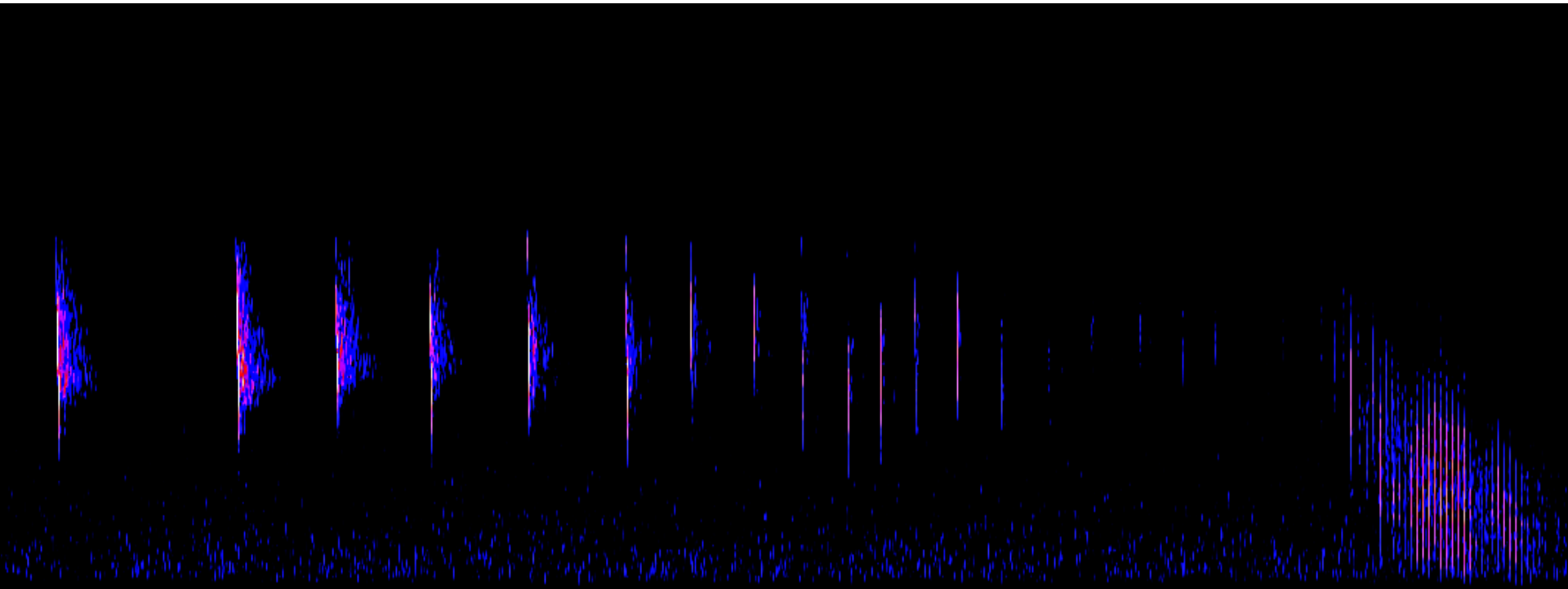
**Emerge**



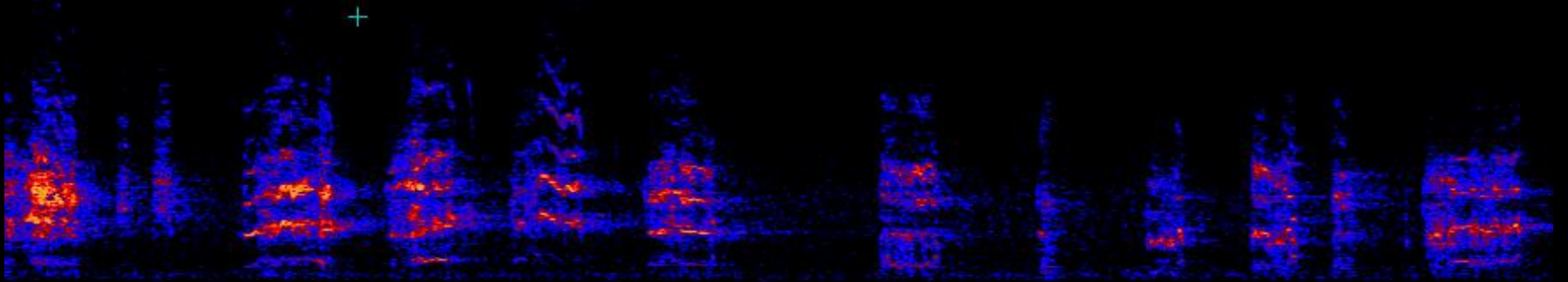
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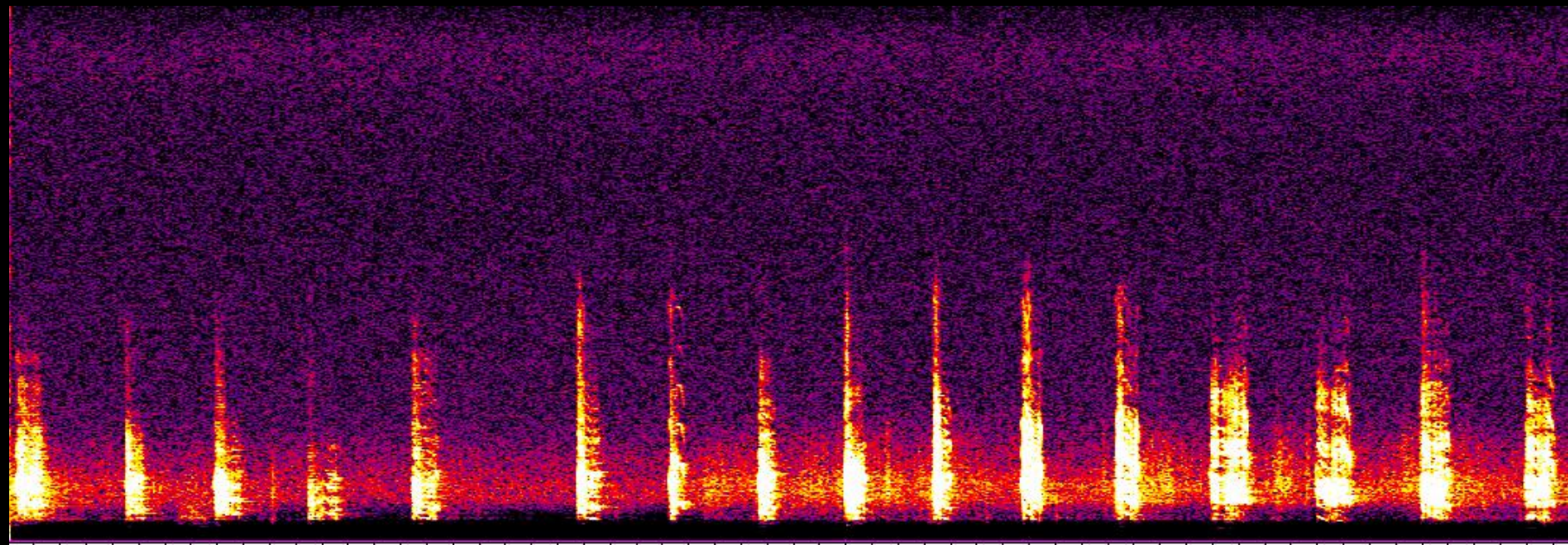
# Echolocation



# Squeaks



# Distress



# Thank you

Indianapolis Airport Authority

Indiana State University

Center for Bat Research, Outreach and  
Conservation

College of Graduate and Professional Studies



# Questions?

